



Evaluation #

New Product # 20069002  
Replaces 200602-I Revision 3

Safety & Buildings Division  
201 West Washington Avenue  
P.O. Box 2658  
Madison, WI 53701-2658

## Wisconsin Building Products Evaluation

Material

Reflective Insulation Board  
Perka "P2000" Insulation

Manufacturer

Polar Industries, Inc.  
32 Grammer Ave  
PO Box 7075  
Prospect, CT 06712

### SCOPE OF EVALUATION

**GENERAL:** This report evaluates the use of Perka P2000 reflective composite insulation board manufactured by Polar Industries, Inc.

The **IBC** requirements below in accordance with the current **Wisconsin Amended ICC Code**:

- **Vapor Barrier:** Perka "P2000" reflective insulation board was evaluated in accordance with the vapor retarder requirements of **s. IBC 1403.3** and **s. Comm 62.1403(1)**. **Note:** See LIMITATIONS OF APPROVAL section.
- **Foam Plastic Material:** Perka "P2000" reflective insulation board was evaluated in accordance with the fire safety requirements of **ss. IBC 2603.1, 2603.2, 2603.3, 2603.4** and **2603.5.6**.

The **IECC** requirements below in accordance with the current **Wisconsin Amended ICC Code**:

- **Thermal Performance:** Perka "P2000" reflective insulation board was evaluated in accordance with the thermal performance requirements of **s. Comm 63.1018(2)(a)3**, and **(b)** and **IECC Chapter 9** for heating season purposes. **Note:** See TESTS and LIMITATIONS OF APPROVAL sections.
- **Moisture Control:** Perka "P2000" reflective insulation board was evaluated in accordance with the moisture control requirements of **s. IECC 502.1.1 [Comm 63.0502(1)]** and **IECC 802.1.2 [Comm 63.0802(2)]**.

### DESCRIPTION AND USE

Perka "P2000" is a composite insulation board consisting of Type 1 molded/expanded rigid polystyrene (ESP) faced on one or both sides with reflective or white polyvinyl finish.

## **TESTS AND RESULTS**

Testing on the Perka “P2000” as a composite insulation board was done in accordance with the following standards:

- ASTM C203-99, Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- ASTM D2842-01, Standard Test Method for Water Absorption of Rigid Cellular Plastics
- ASTM D1621-00, Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- ASTM D2126-94, Standard Test Method for Response of Rigid Cellular Plastic to Thermal and Humid Aging
- ASTM E96, Standard Test Method for Water Vapor Permeance
- \*ASTM C518-04, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- ASTM D2863, Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)

\*ASTM C518-04, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus: **Though this test is referenced in the** (ETL SEMKO, Report No. 3059022-01, dated issued January 24, 2005, Revised July 4, 2005), the actual test was conducted under the CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering test procedures.

**The Results:** average thermal resistance 3.885 °F-ft<sup>2</sup>-h/Btu.

- ASTM C236-89, Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box. **Note:** See LIMITATIONS OF APPROVAL section.

## **Thermal Performance of Perka 2000 Reflect-Sulation Roof System per ASTM C236, Vertical Heat Flow Up**

Testing was performed by Intertek ETL SEMKO, Report No. 3059022-01, dated issued January 24, 2005, Revised July 4, 2005. The test report is on file with the department.

**System Construction:** Roof structural frame consisting of 2 x 8 purlins placed 24 inches on center with 30 inch, 26 gauge steel ribbed panels assembled and fastened to the wood frame with #10, 1-1/2 inch, hex head screws at 12 inches on center. Eight (8) 22 by 48 inch and two (2) 8 by 48 inch, 5/8 inch thick Perka 2000 insulation boards were horizontally placed on the wood purlin frame assembly and the exposed top joint was sealed with aluminum tape. The assembly created a 7-1/2 inch reflective air cavity. Five (5) 1 by 3 inch wood furring strips were placed in line with the wood purlins, over the insulation material, and fastened at 16 inch intervals with 2-1/2 inch drywall screws placed 16 inch intervals. The construction was completed with two (2) 48 by 96 by 1/2 inch drywall sheets attached to the furring strips with 1-1/4 inch drywall screws at 6 inch intervals. A 1 inch reflective air cavity was created with the dry wall enclosure. All but and perimeter joints were sealed with latex caulk to prevent any air infiltration.

**The results, an R-7.5 value.**

## **LIMITATIONS OF APPROVAL**

The IBC limitations below are in accordance with the current **Wisconsin Amended ICC Code:**

- **Vapor Barrier:** Perka “P2000” is a composite insulation board is approved for use as vapor retarder and air barrier.

**Note:** Although air retarders are to reduce transmission of water vapor by convection (air movement), and vapor retarders are to reduce transmission of water vapor by diffusion, these functions may be combined in a single membrane. In practice, considerably more moisture is transported by convection than by diffusion.

- **Foam Plastic Material:** Perka "P2000" reflective insulation board shall be separated from the building interior with a thermal barrier as required by **s. IBC 2603.4**.
- **Thermal Performance:** Perka "P2000" reflective insulation board shall be installed as allowed by **s. Comm 63.1018(2) (a) 3.** and **(b).**

- Notes:**
1. Testing in accordance with the CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering test procedures was done: average thermal resistance R-value of 3.885 °F-ft<sup>2</sup>-h/Btu per inch.
  2. Testing in accordance with ASTM C236 was submitted. The state will allow **an R-7.5 value** for 5/8" thick P2000 in a specified 8 inch deep roof assembly.
  3. Perka "P2000" reflective insulation is approved for an R-value of 3.885 °F-ft<sup>2</sup>-h/Btu per inch. The state has the right to default to the ASHRAE value because Wisconsin's climate is heating-dominant verses cooling-dominant, as in more southern states. Additionally, Wisconsin's Commercial Building Code mandates heating for most buildings but, does not mandate cooling.
  4. When citing this Wisconsin Product Approval for the board or roof assembly, our approved R-values for the board alone and the roof assembly, along with the assembly description and drawing shall accompany that information.
  5. Calculations shall be signed, sealed and submitted in accordance with **s. Comm 63.1019**.

Failure to have ALL assemblies defined in this approval negates the R-values referenced in this approval, as well as the approval itself.

This approval will be valid through December 31, 2011, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The product approval is applicable to projects approved under the current edition of the applicable codes. This approval may be void for project approvals made under future applicable editions. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

### **DISCLAIMER**

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date: Nov. 29, 2007

Approval Date: March 31, 2006 By: \_\_\_\_\_

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Product & Material Review  
Integrated Services Bureau